

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Patent Application of:  
NEOH, et al.

Application No.: 09/895,153

Confirmation No.: 9536

Filed: July 2, 2001

Art Unit: 1762

For: PHOTOINDUCED CONVERSION OF  
POLYANILINE FROM AN INSULATING  
STATE TO A CONDUCTING STATE

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Examiner: Elena TSOY

**REPLY BRIEF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This refers to the Examiner's Answer which was mailed on August 1, 2006.

The Examiner's summarization of the teachings of the Sato reference is as follows:

Sato et al ***fails to teach*** that (i) chloromethylated polystyrene (i.e. a polymer having a polyethylene backbone and pendant benzyl chloride groups [sic] benzyl chloride groups) can be obtained not only by chloromethylating a phenyl-containing polystyrene but also by grafting vinyl benzyl chloride onto non-phenyl-containing polymer such as polyethylene; (ii) a) [***fails to teach*** that] the first viologen polymer film is formed by reacting 4, 4' bipyridyl mono aralkyl halide compound with a chloromethylated polymer film substrate; and b) [***fails to teach*** that] an equimolar mixture of 4,4'bipyridine and p-xylene dihalide is used instead of 4,4' bi pyridyl mono aralkyl halide compound; (iii) [and ***fails to teach*** that] instead of polyvinyl alcohol, polyaniline can be used as electron donor for coating the viologen salt layer.

Examiner's Answer, paragraph bridging pages 4-5 (emphasis supplied). This summary of major differences between what is claimed herein and what is taught in the closest prior art reference is

more reminiscent of an Examiner's Statement of Reasons for Allowance than of a rejection. As pointed out in detail in Applicants' principle Brief, almost every feature of the Sato composition is changed to obtain the present invention. It is unrealistic to contend that a person of ordinary skill in the art, starting from the Sato disclosure, would really have been motivated to locate the Pohl, Williams, and Bertran teachings and then to modify the Sato technology as proposed by the Examiner *in the absence of Applicants' guidance*.

At the bottom of page 5 of the Examiner's Answer, the Examiner contends that by reacting 4,4'-bipyridyl mono aralkyl halide with a benzyl chloride grafted polymer in the presence of a substrate at least some of the benzyl grafted polymer would be deposited as a film on the substrate, thereby forming a benzyl chloride grafted film substrate and that the 4,4'-bipyridyl mono aralkyl halide compound would react with the benzyl chloride grafted film substrate (allegedly as required by claim 36). What the Examiner is proposing here is a physical coating of benzyl chloride grafted polymer on a substrate. This is very different from the technology of claim 36, in which vinyl benzyl halide units are grafted (chemically attached) to the substrate.

At the top of page 8 of the Examiner's Answer, the Examiner contends that Figure 4b of Beratan shows that the methyl viologen acceptor is covalently attached to a film substrate having grafted benzyl groups. The Examiner admits that Beratan does not disclose how the covalent attachment is accomplished, and the Examiner assumes that customary methods were used. The square bracket of Figure 4b does not imply attachment to a substrate. Instead it implies a repeating monomeric unit. Beratan states that his polymer 22 comprises a plurality of monomeric units (col. 4, line 25) and that each unit comprises at least 3 different monomers, the

donor, the intermediate, and the acceptors (col. 2, line 14). Furthermore, the attachment of the polymer 22 to an electrode is described, in lines 38-41 of column 7, as being via “a deposition using directional shadowing, and then using the activated area as an electrode to form a covalent bond with a group such as a silyl at the head end of the polymer chain”. In this case, the polymer is first formed (typically 600 polymer units long – col. 7, line 35) and then attached to the substrate via groups such as silyl. In contrast, in claim 36 the vinyl benzyl halide units are first grafted and then the viologen polymer is grown from these units via the reaction of 4,4'-bipyridine and p-xylene dihalide.

On page 11 of the Examiner's Answer, the Examiner argues that “a polymeric material of Sato et al in view of Williams et al in view of Beratan et al [is] *a composition actually disclosed in the prior art*”. (Emphasis in original.) Applicants recognize that Sato discloses certain compositions in JP 56-26977 and Williams discloses other compositions in US 4,414,080 and Beratan discloses yet other compositions in US 5,016,063. In what document do Sato and Williams and Beratan disclose a polymeric material of the present invention?

In her discussion of inherency on page 11 of the Examiner's Answer, the Examiner cites sections 2111.02 and 2112.01 of the Manual of Patent Examining Procedure (MPEP). It is not clear why she cites MPEP 2111.02, which is entitled “Effect of Preamble”. MPEP 2112.01 does discuss inherency, but the context of the discussion indicates that inherency is a consideration where a claim is rejected over a single reference, *not over a combination of references*.

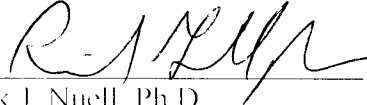
For at least the reasons explained in the Brief on Appeal filed in this application on June 6, 2006, the combination of Sato JP '977, Pohl '233, Williams et al. '080, and Beratan '063 fails to place the subject matter of claim 36 in the possession of persons of ordinary skill in the art.

Accordingly, the rejection of claim 36 under 35 U.S.C. § 103(a) over these references is improper and should be reversed.

If there are any questions concerning this application, the Examiner and/or the Board is/are respectfully requested to contact Richard Gallagher (Reg. No. 28,781) at (703) 205-8008.

Dated: September 26, 2006

Respectfully submitted,

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